

PERICARDIAL ADHESIONS IN THE COBIA *RACHYCENTRON CANADUM* (LINNAEUS)

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ABSTRACT Pericardial adhesions are reported in diseased hearts of the cobia *Rachycentron canadum* (Linnaeus). The epicardium and pericardium are either tightly fused or connected by numerous thick collagenous adhesions over most of the heart surface.

Dockside examination of a sport fisherman's catch of the cobia, *Rachycentron canadum* (Linnaeus), in 1970, revealed three cases of pericardial adhesions. The hearts were removed for further gross and histologic examination. Cardiac tissue was excised, fixed in 10% buffered formalin, and prepared for light microscopy in the usual manner. The following staining methods were carried out on selected tissue sections: hematoxylin and eosin; Masson's trichrome; periodic acid Schiff, after digestion with diastase; Alcian blue (pH 1.0); Alcian blue (pH 2.5) and nuclear fast red; Van Gieson's; and acid orcein.

The pericardium of the normal cobia attaches to the heart only along the anteriodorsal and the dorsolateral edges of the triangular ventricle. This attachment is loose except at the anteriolateral angles and the apex. The remainder of the heart is devoid of attachments except for a few scattered and delicate fibrous strands.

The pericardium of hearts with adhesions was tightly bound to most of the heart surface, especially of the atria and along the ventral surface of the ventricle (Figure 1). Histologic preparations showed the pericardium either tightly fused with the epicardium or connected with it by numerous



Figure 1. Ventral view of a normal (left) and a diseased (right) cobia heart. The aortae are directed upward. Note the attachment of the pericardium only at the apex (arrow) of the normal heart. A, atrium; V, ventricle.

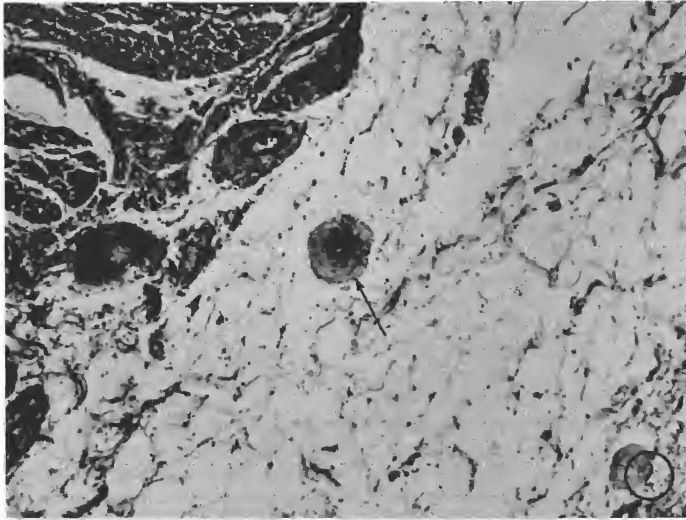


Figure 2. Light micrograph of a cross section through the ventricular myocardium and fused epicardium-pericardium. Note the pacinian corpuscle (arrow) embedded in a collagenous network. x 142.

thick collagenous adhesions (Figure 2). Neither inflammatory cells nor other evidence of inflammatory reactions were present.

Occasionally, pacinian corpuscles were encountered in the fused epicardium-pericardium. Since no pacinian corpuscles were observed in normal epicardium, these end organs were evidently contributed to the fused layer by the pericardium.

Information on inflammatory diseases of fish hearts is essentially non-existent. Bacterial infections are known to cause myocarditis (Wood and Yasutake 1956; Herman 1975) and pericarditis (Herman 1975) in trout. However, pericardial adhesions, usually sequelae to pericarditis in mammals, have

not previously been reported in fish.

One of us (J.S.F.) grossly examined the hearts of numerous cobia at sea in connection with an offshore research project and discovered several additional cases, while another (R.F.W.) encountered a single toadfish, *Opsanus beta*, with pericardial adhesions. Although our findings provided no information concerning the etiology of the pericardial adhesions, they most probably resulted from pericarditis. The disease may occur in a substantial number of cobia of the Gulf of Mexico and a study to determine the incidence of pericardial adhesions in this fish population is planned for the future.

LITERATURE CITED

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- Wood, E. M. & W. T. Yasutake. 1956. Histopathology of kidney disease in fish. *Amer. J. Pathol.* 32:845.